pain=2. Pain was evaluated with patients (a) supine, (b) supine with the leg being moved, (c) sitting on a bed, (d) sitting in a chair, and (e) being moved from bed to chair.

Blood pressure, heart rate, frequency of respiration, urinary output, and blood gases were measured every two hours during the first 12 hours and then four times a day.

The mean pain score dropped from 9.5 (SE 2.5) before injection of methadone to 5.4 (2.5) after injection. Six patients received injections once a day, five received injections twice a day, and one received injections three times a day. Operations took place from one to 16 days after admission (mean 4.4 days). Epidural analgesia was stopped between one and seven days after the operation (mean 3.1 days). No patient could be transferred from bed to chair before treatment because of severe pain. After analgesia was induced by methadone only three patients could not be transferred and all could change position in bed. One patient had urinary retention and had to have a catheter inserted. Five patients had a urinary catheter before the first injection. The remaining six patients passed urine within the first four to six hours after analgesia was induced. No change in blood pressure, frequency of breathing, or arterial blood gases was noted.

Comment

Patients with proximal femoral fracture usually experience severe pain. Pain relief is, however, difficult as the systemic use of narcotics in elderly patients is limited because of side effects.³ Methadone provides excellent analgesia with a lower rate of complications than the systemic use of morphine.^{4,5} The fact that an average of 6 mg of methadone daily produced the desired effect in our patients with a longer duration of action than has been reported may be attributed to the age of our patients.

Preoperative analgesia induced by epidural methadone facilitates early mobilisation and better nursing of patients and may thus prevent some of the well known complications experienced by patients with proximal femoral fractures.

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Incidence of chickenpox in adults and recruitment of plasma donors for manufacture of zoster immunoglobulin

Chickenpox is usually a minor childhood complaint but may cause a severe, life threatening infection in immunosuppressed patients. Passive immunisation using high titres of zoster immunoglobulin may prevent severe infection in subjects who have been in contact with chickenpox or shingles.¹⁻³ Healthy blood donors with high titres of circulating antibody to chickenpox virus provide the plasma for the manufacture of zoster immunoglobulin.

We studied the annual incidence of chickenpox in adults in a semirural general practice of 11 000 patients and assessed whether these convalescent adults would be suitable as donors of specific antizoster plasma.

Patients, methods, and results

Eleven adults were diagnosed as having chickenpox over a year. They were asked to provide blood samples at diagnosis and six weeks and one year after the onset of the rash.

Titres of antibody to chickenpox virus were assayed at the protein fractionation centre using an indirect immunofluorescence antibody assay.⁴ Plasma donations are considered acceptable for fractionation at a titre of 1/32 or greater.

The table shows patient details and serial antibody titres. Of the 11 patients, eight (74%) achieved a titre of at least 1/32 within six weeks of diagnosis. In contrast, of the eight patients tested one year after infection, none were found to have acceptable antibody titres.

Zoster antibody titres in the 11 patients

Case No	Sex	Age (years)	Titre		
			Initial	After 6 weeks	After a year
1	F	34	>32	>32	8
2	M	21	8	>32	16
3	F	22	>32	16	8
4	M	21	4	>32	8
5	F	22	4	>32	—
6	F	22	4	16	—
7	M	21	4	16	8
8	M	43	>32	16	8
9	F	27	>32	16	8
10	M	20	4	>32	8
11	M	25	16	8	—

Comment

Although most adults are immune to chickenpox, in one general practice of 11 000 patients we found 11 convalescent patients who were willing to provide specimens for measurement of antibody titres after infection with chickenpox. All were otherwise fit, healthy adults who would be eligible as donors of plasma, with the hope that they might continue with routine donation after their antizoster titres had dropped.

There are two ways of obtaining plasma for the manufacture of zoster immunoglobulin: the testing of plasma donations selected at random or the follow up of donors recently convalescent from chickenpox or shingles. Random testing of donations is inefficient; in Scotland Cuthbertson *et al* found only 0.7% of randomly selected donations to have a titre of 1/32 or greater.⁴ Antibody titres in donors identified in this way do, however, tend to be highly persistent.⁵ This study showed that, in contrast, 74% of patients convalescing from chickenpox provided one or more acceptable plasma donations within six weeks of diagnosis. These acceptable antibody titres did not, however, persist, and when retested one year after diagnosis none of these potential plasma donors still retained acceptable antibody titres. This confirms the findings of Hejjas *et al*, who reported that the complement fixation titres of blood donors with a recent history of chickenpox waned fairly quickly.⁵

Almost all healthy adults with chickenpox are seen by a general practitioner. This survey shows that a single practice can identify sufficient potential plasma donors to make a considerable contribution to the supply of antizoster plasma. Arguably, it is the general practitioner's duty to encourage these patients to donate their immune plasma for the benefit of immunocompromised patients. The demand for such plasma varies, however, from region to region in the blood transfusion service. We suggest that interested general practitioners should contact their regional blood transfusion centre for advice on the requirements for the recruitment of zoster plasma donors.

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